

RegTech: The Dawn of a New Direction for Regulation

The hack of the Bitcoin exchange CoinCheck in January 2018 and similar incidents demonstrate that the rapid advance of technological innovation necessitates the development of systems able to respond instantaneously to rapidly changing financial conditions. Against this background, the term “RegTech” has recently come into being. RegTech is a portmanteau word formed from “regulation” and “technology.” But what precisely is RegTech? Will it offer effective solutions, and what effect will it have on society? This issue of *My Vision* offers a survey of expert opinion on the subject.

About this Issue

Structural reform of regulation via RegTech – Business opportunities in a field without clear leaders

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Keywords...Regulators and the regulated, cost reduction, business opportunities, new market entries, structural changes in the area of regulation, promising domains for innovation

Expert Opinions

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What is RegTech?

What should Japan do to advance RegTech?

Open data and algorithmic regulation

Tim O'Reilly

Founder and CEO, O'Reilly Media Inc.

Keywords...Technology, algorithmic regulation, realization of simple and effective regulation

RegTech can play a key role in the enhancement of compliance management

Masataka Hayakawa

Senior Partner, Atsumi & Sakai

Keywords...Contemporary corporate compliance, corporate ethics, CSR, data sharing between regulatory authorities and companies

A technological response to regulation for an era of technological innovation

Takamasa Sasaki

President and CEO, AOS Legal Technologies, Inc.

Keywords...Innovation through technology, regulation through technology, race against time, synergistic effect with LegalTech

RegTech provides a background supporting mechanism – Managers must promote digitalization

Hiroyuki Morikawa

Professor, Graduate School of Engineering, The University of Tokyo

Keywords...Low-cost and rigorous compliance with regulations, background support for safety and security, fostering of BtoB ventures

Harnessing the enormous potential of RegTech

Kenji Kushida

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Keywords...Resolution of regulatory problems, alternative mechanisms for what governments cannot or will not provide, new private sector businesses

Interview period : January – February, 2018

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Editor : Isao Arai

* Tim O'Reilly submitted his own manuscript.

Structural Reform of Regulation via RegTech – Business Opportunities in a Field without Clear Leaders



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Appropriate Regulation using the Power of Technology will also reduce Costs

In an era in which technological innovation has advanced so far, it would be odd if the tide of innovation failed to reach the world of regulation. While RegTech is not yet a familiar term, it represents an innovation that brings regulation and technology together, one which will change the orientation and the methodology of regulation through technological means. RegTech is a field that can have a significant impact in the future, and a field in which Japan has the potential to gain an international competitive advantage.

In order to do so, however, it will be necessary to possess a solid understanding of the trends in the field, and for the public and private sectors to consider future responses together. In this issue of *My Vision*, a group of specialists in the field discuss important points from a range of perspectives.

We tend to think of discussion of regulation as necessarily urging the relaxation of regulations. In actual fact, however, we also have to consider the cost of implementing regulations. There is a significant burden of cost for both the companies that are regulated and the authorities that regulate. The regulated side is forced to retain evidence that it complied with regulations, and to compile documentation to serve as proof of this. Meanwhile, the regulating side must invest time and labor in processes such as conducting checks of this documentation and of the directorship of companies.

These twin costs can actually be significantly reduced through the use of technology. This is one aspect of RegTech.

Masataka Hayakawa, a Senior Partner in the law office Atsumi & Sakai, stresses that the checks and monitoring conducted by companies to ensure thorough compliance with laws and regulations are highly compatible with technological approaches, and that the utilization of RegTech can significantly reduce the cost and labor expended on compliance. At the same time, Takamasa Sasaki, President and CEO of AOS Legal Technologies, Inc., points out that if the regulating and regulated sides do not both utilize new technologies, the cost of implementing regulations will increase, and it will become difficult to adequately regulate companies that are using sophisticated technologies.

Tim O'Reilly, the founder and CEO of O'Reilly Media Inc., indicates that the skillful use of new technologies can both reduce the amount of regulations and ensure more appropriate management, and emphasizes the necessity for governments to also actively participate in the evolution of RegTech with the goal of realizing simpler and more effective regulation.

Major Business Opportunities

However, discussion of reducing administrative costs through the use of technology does not exhaust the subject of RegTech. It also presents private companies with major business opportunities,

and it possesses considerable potential to stimulate new market entries and corporate growth.

Taking the financial industry as an example, Professor Hiroyuki Morikawa of The University of Tokyo points out the high cost of responding to regulations for this industry, and stresses the potential of the use of technology to considerably reduce these costs. At the same time, significant business opportunities will be born for the companies supplying the technologies that will realize these cost reductions, with the potential even for growth into global platforms.

Dr. Kenji Kushida of Stanford University argues that not only will RegTech reduce costs, but it will also make possible new approaches to regulation that could not be realized using previous technologies. He indicates that the exploitation of technological innovation has the potential to enable private companies to offer such new approaches to regulation, which will represent new business opportunities for them. A major point in this is the fact that technological innovation has dramatically increased the ability to collect and process data.

The Structure of Regulation will Change

Up to the present, it has been standard practice that administrative authorities such as national and local governments represent the regulating side, while private companies are regulated. However, RegTech will produce a significant change in this structure. It is possible that rather than being the exclusive responsibility of the administrative authorities, regulation will be implemented by the authorities and private companies in cooperation, or alternatively that the authorities will provide the platform, but private companies will deal with implementation.

Considering this possibility, we can see that from this perspective also RegTech will offer private enterprise major new business opportunities. Clearly, private companies have an advantage over administrative authorities with regard to the development of reliable automatic processing programs and the collection and processing of data that will be useful to regulation. Some aspects of this process should be left to private enterprise – development in the private sector will be essential to the realization of technologies that will enable us to build mechanisms for entirely new forms of regulation using data collected by the IoT and other information technologies.

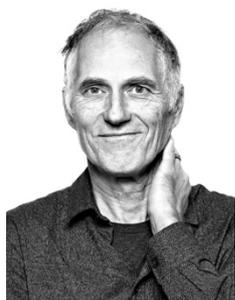
As we see then, new business opportunities will be born, and we can expect that companies will make active use of these opportunities through new market entries, which will expand the scale of the market.

However, it is of course the case that appropriate responses on the part of the administrative authorities will also be an essential factor in enabling private companies to make more proactive use of technology and provide more sophisticated regulatory mechanisms. One necessary response will be to appropriately determine such factors as the allocation of responsibility between the public and private sectors and the scope for sharing of information – efforts to create an environment that is more encouraging of cooperation. This will no doubt also require a certain amount of reform of the legal system.

In any event, this remains a field in which there are no clear leaders, and one which holds significant opportunities for Japan. The diverse opinions of the experts collected in this edition of *My Vision* make us keenly aware that both the public and private sectors are promising domains for innovation in the era of RegTech.

Professor Yanagawa took his doctorate in economics from The University of Tokyo. He specializes in contract theory and the study of financial contracts.

Open Data and Algorithmic Regulation



Tim O'Reilly

Founder and CEO,
O'Reilly Media Inc.

There are those who say that government should just stay out of regulating many areas and let “the market” sort things out. But there is no such thing as an unregulated market. Effective markets are actually the *outcome* of effective regulations.

We can learn a great deal about regulation by looking at the great 21st century internet platforms. Imagine search engines without the “regulatory system” of search algorithms, email without spam filtering, financial systems and online payment without fraud detection, ecommerce systems without product recommendations and ratings. Just as companies in these industries build regulatory mechanisms to manage their platforms, government exists as a platform to ensure the success of our society, and that platform needs to be well regulated!

Part of the problem is that government regulations haven’t kept up with the scale and speed of the modern economy. Governments typically have a mountain of paper rules and inefficient processes, and little ability to adjust the rules or the processes when they discover unintended results. The normal regulatory model focuses on the rules rather than the outcomes. Laws should specify goals, rights, desired outcomes, authorities, and limits. If specified broadly, laws can stand the test of time. Regulations, which specify how to execute those laws in much more detail, should be regarded in much the same way that programmers regard their code and algorithms, that is, as a constantly updated toolset to achieve the outcomes specified in the laws.

We are at a unique time when new technologies make it possible to reduce the amount of regulation while actually increasing the amount of oversight and production of desirable outcomes. Increasingly, our interactions with businesses, government, and the built environment are becoming digital, and thus amenable to creative forms of measurement, and ultimately algorithmic regulation.

Every commercial website not only measures its traffic, but constantly makes adjustments to remove features that are unused and to test new ones in their place. These websites commonly measure users’ time on site and abandon rate, and analyze the paths people use to reach the desired information. Simple web metrics like these are one simple kind of algorithmic regulation that could lead to a massive simplification of government websites and reduction of government IT cost. This is even more true when we enter the world of mobile applications, ubiquitous sensors, the Internet of Things, and Artificial Intelligence.

The use of algorithmic regulation by government increases the power of regulators and could lead to abuses. “Mission creep” is a real risk. The answer to this risk is to put stringent safeguards in place to limit the use of collected data beyond the original purpose. The data used to make determinations should be auditable, and whenever possible, open for public inspection.

We’re just at the beginning of thinking about how measurement, outcomes, and regulation come together, but there’s no question that government needs to participate in the big data algorithmic revolution, to simplify and make regulation more effective.

Tim O'Reilly is the founder and CEO of O'Reilly Media, Inc. O'Reilly Media “delivers online learning, publishes books, runs conferences, urges companies to create more value than they capture, and tries to change the world by spreading and amplifying the knowledge of innovators.” Mr. O'Reilly's main focus is the impact of technology on the economy and society, and the possibilities that this creates. With the launch of the Gov 2.0 Summit in 2009, he established an ongoing forum for discussion regarding the modernization of government technology. He argues that the real secret of success in “Government 2.0” is thinking about government as a platform. Mr. O'Reilly is also the author of numerous books and articles, including *WTF?: What's the Future and Why It's Up to Us*.

RegTech can play a Key Role in the Enhancement of Compliance Management



Masataka Hayakawa

Senior Partner, Atsumi & Sakai

Diversifying social value systems and the evolution of IT have broadened the concept of corporate compliance. Today, in addition to compliance with laws and regulations, elements including CSR and corporate ethics have also come to be considered aspects of compliance. For example, among the successive incidents of falsification of quality data that occurred in 2017, there were cases which did not, strictly speaking, violate laws or regulations, but simply violated the terms of contracts with business partners. However, even if actions do not violate laws or regulations, if they are regarded socially as unacceptable actions, they represent a violation of compliance, and it is difficult to predict or control how the damage for the company involved will spread. In addition to complying with

laws and regulations, companies are under a greater requirement than ever to respond appropriately to the demands of society and their various stakeholders, including consumers, shareholders, business partners and employees.

Against this background, RegTech has the potential to play a key role in the realization of a contemporary style of corporate compliance. To ensure thorough compliance with laws and regulations, companies are required not only to comprehensively and accurately understand the laws and regulations that they must observe in the course of their business procedures, but also to be fast enough to respond immediately to frequent revisions in laws and regulations, guidelines, etc. These requirements are highly compatible with the application of technological means. Using RegTech, it would be possible to immediately detect violations of laws and regulations in the field, for example in a factory in the manufacturing industry, and, in addition, to put in place measures, for example, to preserve and prevent the falsification of data related to the reliability of quality. The key to risk management is, while being aware that illicit activities and misconduct will inevitably occur, to determine how to identify such incidents at an early stage and nip them in the bud before the problem becomes worse.

In the future, companies should reduce the number of personnel engaged in processes that can be automated through the use of RegTech, and direct their human resources and expenditure into compliance management that responds appropriately to the demands of society and stakeholders and increases corporate value, for example the implementation of CSR initiatives that consider the environment or human rights. Compliance management of this type is precisely an area in which humans rather than machines must make judgments. In order to more effectively realize this goal throughout society as a whole, it will be necessary for information and data concerning all forms of regulation to be shared between, and utilized by, companies and the government and other regulatory authorities. It will be important to make efforts towards the establishment of infrastructure that enables information that is essential to enabling companies to verify laws and regulations (during court cases, for example, but also in relation to administrative precedents that have not yet been enshrined in laws and regulations, etc.) to be made public and supplied by both the regulatory authorities and companies, and for this information and data to be utilized as a public good.

Mr. Hayakawa is a lawyer working in the area of compliance, encompassing crisis management responses involving corporate misconduct and other issues, and the provision of advice regarding the construction and operation of internal whistleblowing systems. He is also actively involved in providing support for the creation of businesses using technology, in particular AI. Mr. Hayakawa is a graduate of The University of Tokyo's Faculty of Law, and trained at the Legal Training and Research Institute of the Supreme Court of Japan. He served as a public prosecutor from 2000 to 2014, and was registered as an attorney in 2014. During his period as a public prosecutor, Mr. Hayakawa was a member of the Special Investigation Department of the Tokyo District Public Prosecutor's Office and the General Affairs Division of the Ministry of Justice's Criminal Affairs Bureau. He is a board member of the AI Business Creation Association and a Certified Fraud Examiner. In addition to holding seminars and giving lectures, Mr. Hayakawa is also a frequent contributor to legal journals.

A Technological Response to Regulation for an Era of Technological Innovation



Takamasa Sasaki

President and CEO,
AOS Legal Technologies, Inc.

The essence of RegTech is the concept that we will be unable to regulate technology unless we respond via technology. The revolution occurring in the financial world – the appearance of virtual currencies based on the blockchain, structural changes with the rise of FinTech, etc. – is a revolution driven by technology. The scandals that occur against this background, such as the collapse of Mt. Gox and the CoinCheck theft, originate in technology, and regulatory authorities have no option but to clarify these problems via technology. As situations change with dizzying rapidity, in particular the rapid rise and fall in the price of Bitcoins, ensuring that companies comply with the rules that have been determined is a race against time. Changing laws and sending out paper-based

directives requiring reform of business procedures will always lag behind. It is essential that this approach is supplemented by technology, for example automatic checks and predictive tools.

Nevertheless, even if RegTech is introduced, scandals will still occur as a result of companies violating the rules or failing to adequately respond to regulations. This sets the scene for LegalTech. LegalTech merges law and IT, and provides technological support for official investigative authorities, lawyers, and corporate legal affairs departments. Since its establishment, the role of AOS Legal Technologies has been to provide support for the recovery of erased electronic data and the preservation of evidence. This technology is not only effective after a problem has occurred, but can also be employed as a tool enabling regulatory authorities to monitor whether companies are complying with regulations before any problems occur. It can therefore also be a RegTech. The melding of LegalTech and RegTech will further boost their effectiveness.

Because Japan's financial authorities put in place measures to assist financial institutions beleaguered by low interest rates, the nation now possesses the world's most advanced level of financial administration in the fields of virtual currencies and FinTech. The world's attention is focused on where this will lead. Japan is lagging behind in the introduction of both RegTech and LegalTech, but has the ability to import the best technologies from overseas and apply them to regulation and the law, polishing them in the process. A business environment of this type is an unparalleled opportunity, and I am confident that it will assist Japan's economy in recovering from its "lost" 20 years.

Mr. Sasaki is involved in a number of LegalTech businesses centering on data storage and data transmission technologies. Following graduation from Waseda University's Faculty of Science and Engineering, he worked in OS development for a major computer manufacturer before founding AOS Technologies in 1995. In 2000, the company commenced marketing the data recovery software FINALDATA, which received numerous awards, including the Nikkei Award for Excellence in the Nikkei Superior Products and Services Awards. In 2012, Mr. Sasaki founded AOS Legal Technologies. In 2015, the company was awarded the Minister of Economy, Trade and Industry's Award in the Japan New Business Conference Council's Japan New Business Creation Awards (the highest award in the "Entrepreneur" category). In 2016, Mr. Sasaki founded APIbank, Japan's first API Exchange. In addition to his business activities, he is also the author of numerous books and articles.

RegTech provides a Background Supporting Mechanism – Managers must promote Digitalization



Hiroyuki Morikawa

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RegTech provides an infrastructural mechanism that functions in the background to support a safe and secure society. The development of RegTech was spurred by the large-scale strengthening of financial regulation following the global financial crisis. The number of regulations and the amount of the fines associated with a violation of the rules are both increasing year-by-year. For the financial world, the cost of responding to regulations has become enormous, and payments to be made in the event of a breach of the regulations will be figured in units of trillions of yen. This situation has driven the transition from analog responses – in which actual humans read and process documents extending to tens of thousands of pages – to technological responses involving the digitalization of the content of regulations. As an expanding technology that helps to ensure compliance with regulations,

RegTech will function out of sight of users, but can be expected to support the safety and security of financial services more rigorously and at lower cost.

The digitalization of procedures related to regulations will not be limited to the financial industry, but will advance in other industries also. Because all businesses are potential users of RegTech, the market scale for the technology is considerably larger than that of businesses targeting consumers. In general, BtoB has greater potential to generate fundamental innovation than BtoC. Spreading unrecognized by consumers, RegTech has the capacity to effect a complete revolution in the underlying structures of society in five to ten years. Like the steam engine or electricity before it, it will support social infrastructure and transform our lifestyles.

If Japanese companies take the lead in the use of RegTech platforms, it will generate significant business opportunities. Unfortunately, however, in Japan there are numerous BtoC ventures, but few BtoB businesses. The issue for Japan is how to increase the number of BtoB ventures. Digital business involves considerable risk, and RegTech itself presents the difficulty that only individuals intimately familiar with their specific industry and the business environment are able to use it in creating new businesses. Like the role of the Marine Corps in military operations, the mission is extremely risky; however, it is essential that companies engage with it, keeping their footwork nimble. It is my hope that Japanese managers will continue to engage with digitalization at their work sites, and will adopt a stance of tolerant acceptance even if their efforts do not at first succeed.

Professor Morikawa's fields of specialization are the IoT, M2M, big data and wireless communications. Advancing the development of technologies that will provide the foundation for a future information network society, he seeks to realize major structural change in industry, the economy and society through the use of data. Professor Morikawa completed coursework in the doctoral program of The University of Tokyo's Graduate School of Engineering, and holds a doctorate in engineering. He took his present position in 2006, following positions including a term as an Associate Professor in the Graduate School of Engineering, The University of Tokyo. From 2007 to 2017, Professor Morikawa was a Professor in The University of Tokyo Research Center for Advanced Science and Technology. Professor Morikawa has also held a number of official positions, including as a member of the Information and Communications Council of the Ministry of Internal Affairs and Communications and Vice-Chairperson of the OECD's Committee on Digital Economy Policy. He is also the author of numerous books and articles.

Harnessing the Enormous Potential of RegTech



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The domain of “RegTech” (Regulation Technology) is still relatively undefined, since it is a new area, with a wide range of interpretations in how much is considered “regulation.” Nevertheless, the relatively undefined state presents opportunities. My own definition of RegTech is extremely simple – I understand it as technology applied to regulation to enable the formulation, execution, compliance and monitoring of regulatory activities.

The domain of regulatory compliance – in which firms must ensure that they comply with regulations – is a fast growing business area, especially in finance. Requirements to detect and report activities such as fraud or suspicious transactions require sophisticated algorithms and can be aided by Artificial Intelligence, and the amounts paid by large firms in fines provide a large market opportunity for compliance RegTech. In other areas such as formulating contracts that comply with various local regulations, and in uses such as engaging in inter-company transactions of intellectual property, RegTech solutions can potentially decrease transaction costs significantly.

Arguably one of the most significant potential domains for RegTech to have an impact on society is in areas where the private sector provides services or information that governments cannot, or choose not to – at low cost. In the US, for example, the Trump administration has pulled back from performing many of the tasks that one might expect government to provide, such as the Environmental Protection Agency sharply curtailing data collection about air and water pollution. As a result, a wave of start-ups are joining with local municipalities to monitor environmental data in the place of the government using low-cost sensors. In Japan also, the impetus towards harnessing RegTech for tasks beyond the government’s scope as the population ages is accelerating. Managing elder care, for example, requires coordination among various actors, including physicians, pharmacies, local government offices, care providers, family, and local community members. Companies have begun providing services that include local government offices as part of their eldercare management services; this could be considered RegTech as well.

Recent developments in RegTech and its vast potential are driven by the transformation of computing power from a scarce to an abundant resource. The ability to collect vast amounts of data at extremely low cost, and processing that data with global-scale computing resources have driven the world into new frontiers of what activities and data can be measured, captured, optimized, and transformed. The Internet of Things (IoT) and breakthroughs in various forms of AI, such as deep learning and machine learning, are moving our society much closer to capturing a wide spectrum of activities linking governments and companies, governments and civil society, companies to companies in varying regulatory environments, and between people in various national contexts. All of this is input to RegTech. Market opportunities for startups will arise from inefficiencies and “pain points” of individuals and companies. As high end tools and services become commoditized and available widely at low prices, RegTech will penetrate into all aspects of society.

Dr. Kushida conducts research on the IT industry and mechanisms for innovation from the perspective of political economy. He is particularly focused on the economic ecosystem of Silicon Valley and analyzing Japanese and US start-ups. Dr. Kushida is the Project Leader of the Stanford Silicon Valley – New Japan Project. Schooled at an international school in Tokyo, he went on to study economics and East Asian studies at Stanford University. He took his present position after receiving his Ph.D. in political science from UC Berkeley.